

Morocco WPM Watershed Protection and Management Task Order No. 814 under the BIOFOR IQC

Contract No. LAG-I-00-99-00014-00

2002 Annual Progress Report

Submitted to:
U.S. Agency for International Development
Submitted by:
Chemonics International Inc.



November 2003



This publication was made possible through support provided by the U.S. Agency for International Development, under the terms of Award No. LAG-I-00-99-00014-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

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1. Introduction

This document presents the Year 2002 progress report for the Morocco Watershed Protection and Management (WPM) Activity. This report covers the period from January 1st, 2002 to December 31st, 2002. The WPM activity has the following objectives:

- In the Nakhla watershed, the objective is to expand the successful Water Resources Sustainability (WRS) pilot project agroforestry and soil erosion control activities to the entire watershed, thereby reducing siltation of the Nakhla reservoir and prolonging its useful life.
- In the Souss-Massa river basin, the objective is to identify, design, and implement new watershed protection activities to control soil erosion, reduce the spread of desertification, and protect water quality.

These objectives are integrated in USAID's Strategic Objective 6 to improve water resources management in the Souss-Massa river basin. While activities related to the Nakhla watershed do not occur in the Souss-Massa region of Morocco, completing an integrated watershed management program in Nakhla will provide valuable lessons of integrated water management that can be applied and replicated in the Souss-Massa.

After this introductory section, Section 2 presents WPM activities undertaken in the Nakhla watershed during the year of 2002, Section 3 presents activities in the Souss-Massa river basin, Section 4 shows activities anticipated in the first quarter of the next year, section 5 presents meetings and events attended by WPM staff in 2002, Section 6 lists the consultants fielded during the reporting period, and Section 7 presents reports prepared by the project. Annex A presents the budget tables and Annex B lists WPM Project technical and management reports.

2. Activities in the Nakhla watershed

2.1. First quarter activities

The WPM objective is to expand the successful activities undertaken under WRS in the Nakhla watershed. In the fourth quarter of 2001, we identified areas in the watershed suitable for the implementation of new agroforestry and soil erosion control activities. In the first quarter of 2002, we prepared a detailed diagnostic assessment of soil erosion issued in the five zones of the Nakla watershed selected for intervention under WPM, and we began the implementation of tree planting activities.

Five zones were identified for intervention under WPM in the Nakhla watershed:

- Zone I : Zerka
- Zone II : Amtil
- Zone III : Azzemour-Achekrade
- Zone IV : Beni Moussa
- Zone V: Tanarakt

In the first quarter of 2002, the WPM project organized the plantation of 420 hectares of olive trees in Zone V. A total of 58,000 olive trees were distributed to 723 farmers. The farmers planted the trees along contour lines. In addition, 25,000 fruit trees were planted in irrigated areas, with the following distribution: 7,200 prune trees; 7,000 quince trees; 4,800 apricot trees; and 6,000 pear trees.

In collaboration with the DPA of Tetouan and the Direction Régionale des Eaux et Forêts (DREF) of Tetouan, WPM stabilized 2 kilometers of ravines between Zones III and V with the plantation of 7,500 acacia trees. WPM provided technical assistance, the DREF furnished the acacia trees, and the DPA extension agents participated in the ravine identification and the plantation supervision.

Fouad Rachidi and Rachid Bouabid assisted the DPA in preparing a dossier for submittal to the Ministry of Agriculture to have the Nakhla watershed eligible for financing as a Périmètre de Mise en Valeur Bour (PMVB). This financing will allow for further watershed management activities to be undertaken in Nakhla.

In order to allow the Centre Technique (CT) of Ben Karrich to effectively participate in WPM project activities in the Nakhla watershed, the project purchased a 4-wheel drive vehicle for the CT. This vehicle is being used by the CT in conducting project activities and has greatly enhanced the ability of the CT to intervene in project areas.



The WPM project team and the CT of Ben Karrich carried out a number of training and extension activities in the Nakhla watershed in the first quarter of 2002. Specific training activities included:

- Plantation of olive trees (4 days)
- Implementation and maintenance of water catchments under the trees (3 days)
- Chemical clearing of residual cereals (2 days)
- Spring treatment of olive trees (1 day)
- Maintenance of rosaceous plants (1 day)

2.2. Second quarter activities

In the second quarter of 2002, we sealed the institutional partnership for the extension of the project by receiving commitments from the Agence du Nord, the Ministry of Environment, the Ministry of Agriculture, the Ministry of Water and Forests, the Loukkos River Basin Agency, and the Wilaya of Tetouan to sign a collective agreement for the extension of Nakhla activities in the watershed.

In June 2002, we organized a workshop on the participatory approach applied to rural development projects. Representatives from partner agencies at the national and local levels were represented (Ministry of Agriculture, Ministry of Water and Forests, Department of Environment, Wilaya of Tetouan, Loukkos River Basin Agency).



The participatory approach used by the WRS project in Nakhla and by the GEF-Rif project in Chefchaouen was presented. Participants then worked in groups to identify the key features of the approach that should be used in rural development projects and to determine ways to improve the participation of stakeholders in integrated rural development projects.

In the second quarter of 2002, we prepared an economic and financial analysis of the extension of soil erosion control activities in the Nakhla watershed. This analysis showed that the internal rate of return of the project exceeds 35%, which indicates that the benefits accruing from proposed actions far outweigh the costs of these actions.

WPM consultants Fouad Rachidi and Rachid Bouabid also helped the DPA of Tetouan complete the background document to receive approval from the Ministry of Agriculture to include the Nakhla watershed as a PMVB (Perimètre de Mise en Valeur Bour). This action would make funds available to the DPA to implement additional rural development activities in the watershed.

The project team has also examined the possibility of implementing the raising of chickens and rabbits by women groups in Nakhla. We identified potential locales for chicken and rabbit production and received quotes from vendors. This action is one of the indirect interventions planned under WPM

2.3. Third quarter activities

In the third quarter of 2002, a collective agreement was signed by all partners for the extension of the Nakhla project. Signatories include the Department of Environment, the Agence du Nord, the Ministry of Agriculture, the Ministry of Eaux et Forêts, the Loukkos River Basin Agency, the Wilaya of Tetouan, and the WPM project.

In the reporting period, we implemented some activities related to both direct and indirect interventions, as planned in the project work plan. We identified pilot sites in the zones where olive trees were planted, where vine will be reintroduced. Vine will be planted between olive trees on the contour lines. Tree vine seedlings will be planted between two olive trees. The vine was chosen as an alternative to the grass strips that was not accepted by farmers in the WRS project. Because of the history of the vine in the Rif area, we think that it will be much appreciated by farmers. It will play the same role as the grass strip, in term of preventing soil erosion since the contour line planted with vine will not be plowed by farmers, thus giving a chance to a banquette type to be installed.

We also identified pilot sites, in all zones, where stones strips will be installed on contour line between olive trees. This soil conservation measure will help reduce soil erosion.

In collaboration with the DREF-Rif, we selected the ravines that will be mechanically and biologically treated to prevent ravine erosion. The DREF-Rif is doing

the full study on the mechanical treatment of ravines that should be ready for implementation in the fourth quarter of 2002.

In term of income-generating activities, we have created two women associations in Amtil (zone 7) and Bou Attou (zone 2) with 41 and 27 members, respectively. Members from these associations were taken to visit another women association working on rabbit production in the Tetouan area. It was a chance for the associations to see and discuss the work needed for rabbit production and to have an idea of the extra income generated by this activity.



Field days were organized for farmers from Zones 1, 2 and 3 for the restoration of cuvettes around olive trees and to discuss the benefits of supplemental irrigation to the young plantation during the hot summer of 2002.

Chemical treatment against olive tree diseases was discussed during the field days organized for farmers from Zones 2, 3 and 7.

We signed, with the DPA of Tetouan, a program contract for the period between July and December 2002.

2.4. Fourth quarter activities

In the fourth quarter of 2002, we implemented actions related to olive tree plantation, the correction of ravines, and the installation of stone strips and ditch strips along contour lines.

We marked cropland on contour lines for about 30,000 planting spots in areas located in Zones 6 and 7. We could not plant all the areas targeted because of the heavy rains the region received in late 2002 and the fact that farmers were busy plowing their land. Only 9,000 olive trees were planted and the plantation will continue in 2003. Farmers from Zone 2 asked for a site to be planted with almond trees. Four thousand almond trees were distributed and planted on contour lines.

In irrigated terraces, we distributed 10,000 fruit trees for plantation of different species such as plums, apricot, apple and pomegranate.

We installed stone strips along contour lines in a pilot site of about 7 hectares in Zone 4. The strips will be planted with olive and/or almond trees to combine the conservation measure with income generating activities.



We installed ditches along contour lines between olive trees on over 13 hectares. These ditches will be planted by vine. Vine in combination with the olive trees will play the same role as the grass strips originally planned.

The frequent rains slowed the work on the plantation of ravines. However, this action should speed up in the first quarter of 2003.

A team consisting of representatives from the CT of Ben Karrich, the DERF and WPM selected sites for rangeland seeding and plantations. The CT and DREF will validate the sites with the population.



Concerning the indirect interventions, goat production received most of the attention during the fourth quarter of 2002. We identified farmers who will be involved, with the support of WPM, in the food supplementation and the goat/cattle management trials. For goat production, we have 2 farmers each from Zones 1 and 4, and 1 farmer each from Zones 2 and 3. Cattle trials will benefit 2 farmers from zone 8.

During the reporting period, we proceeded with immunization and internal parasites control for goats and internal and external parasites control for cattle. Only animals selected for the trials have been treated.

We delivered a collective improved cookstove to the Amtil women's association and held a demonstration session on the use of the stove. The association provided a shelter where the stove will be installed and the shelter is accessible to all women of the association.

Another training session on rabbit production was conducted for the same association. This session will help the women maintain the rabbits and the materials they will receive in order to maximize their income.

3. Activities in the Souss-Massa River Basin

WPM activities in the Souss-Massa focus on three components: (1) watershed soil erosion control, (2) industrial pollution prevention and control, and (3) wastewater treatment and reuse

3.1 Soil erosion control

3.1.1. First quarter activities

Following the selection of Bigoudine sub-watershed to protect the Abdelmoumen dam from accelerated siltation, a WPM team of consultants, together with staff from the Department of Environment, the ORMVA of Souss-Massa, the Direction Régionale des Eaux et Forêts of Agadir, and the Wilaya of Agadir, conducted a detailed participatory diagnostic of the watershed in January.

The diagnostic assessment identified the main components of the watershed socio-economic production system. Specifically, the Team collected information on climate, physical characteristics, soil conservation practices, water quality and availability, crop production systems, fruit trees, forest resources, animal production systems, apiculture, argan oil production, emigration, social organization, activities of NGOs and associations, women activities, health and education services.

A diagnostic assessment report of the Bigoudine watershed was prepared in March 2002. This diagnostic will serve as the basis for the implementation of an action plan based on the constraints identified. The action plan will propose a series of direct and indirect interventions to improve water storage and use; increase the productivity of agricultural and animal production systems; protect and increase the efficiency of the use of the forest; and reduce soil loss.

We also prepared a draft collective agreement for the project, which includes as signatories the Wilaya of Agadir, the Department of Environment, the Ministry of Agriculture, the Ministry of Water and Forests, the Sous Massa River Bassin Agency (ABH) and the WPM project.

3.1.2. Second quarter activities

In May, WPM organized two workshops to present the results of the participatory diagnostic assessment of soil degradation in the Bigoudine watershed above the Abdelmoumen dam. One workshop involved beneficiaries while the other included institutional partners. Both workshops were very well attended and generated a great deal of interest in the project. In addition to presenting the results of the diagnostic assessment, the workshops were also intended to discuss and validate the proposed actions to be undertaken under WPM.

In the second quarter of 2002, project consultant Rachid Bouabid prepared a soil map of the Bigoudine watershed based on soil sampling and aerial photographs. This map will be digitalized and will be included in an upcoming Geographical Information System.

The collective agreement for implementation of WPM activities in the Bigoudine watershed was signed by the main project partners: Ministry of Agriculture, Ministry of

Water and Forests, Department of Environment, and the WPM project. In the second quarter of 2002, we finalized the contract-program for the first year of project implementation.



3.1.3. Third quarter activities

During the third quarter of 2002, we started the intervention concerning the rehabilitation of the irrigation network. This intervention was the first priority set by both farmers and partners during the validation workshop held in May 2002. We surveyed the irrigation perimeters in the watershed and had a meeting with farmers to stress the need for creating water users associations in each perimeter before implementing this action.

In collaboration with the ORMVA-SM, we started with five irrigation networks located in five douars. A detailed study of the networks was done and an estimation of the cost of the intervention was set, given that farmers will provide the labor.

We discussed the annual program contracts with both ORMVA-SM and DREF-SM. However, the signature of these contracts depends on the signature of the collective agreement by the Wali of Agadir.

3.1.4. Fourth quarter activities

During the fourth quarter of 2002, a lot of effort was put into convincing the Wilaya of Agadir to participate in the soil erosion component of the project, thus backing the collective agreement signed by the other partners. Finally, the Wilaya issued, on

December 5th, a letter of support where it asked the local Caïd to work with the project and to facilitate local administrative procedures necessary to implement the actions identified in the work plan.

While waiting for to get the letter of support of the Wilaya, we worked with our partners on the ground, the DREF-SM and the ORMVA-SM, to prepare the implementation of planned activities for the 1st quarter of 2003.

We validated the study on the rehabilitation of the irrigation network with the concerned villages. We selected the private company that will deliver the construction materials to the sites. We prepared 4 contracts which stated the responsibility and obligation of each partner related to rehabilitation of the irrigation network. These contracts were signed by the farmers associations, the ORMVA-SM, the Caïd of Tikki, the Director of the CMV of Immouzzet, the president of the Rural Commune of Tikki and the WPM project.



We elaborated with the DREF-SM a suitability map for the argan forest in the watershed. The local population and the DREF staff in Agadir, Tiznit and Taroudant validated this map.

We identified with the population sites for the plantation of argan, cactus and carob trees in the argan forest and rangeland areas within the watershed. In the dryland cropping area, farmers expressed the need for planting almond trees. This action will be implemented in the first quarter of 2003.

Concerning animal production, we conducted a survey of goats in the watershed. Through this survey we identified the needs for vaccination and other sanitary measures to improve animal production in the area. We selected farmers who will benefit from the supplementation and herd management demonstration trials.



We bought and transferred to the area (douar of tazarine) a collective cookstove (GEF-RIF type). This cookstove was used in the demonstration workshop held for women in the purpose of introducing it in the area. A survey on how many family are interested in using the oven will be done.

Awareness raising workshops were held for women on the role and advantages of the cooperative in organizing the work between its members. Through the organization, women can save time that can be used in other activities.

Finally, we generated and integrated different data layers in a GIS environment to be able to monitor the implementation of different actions and to estimate their impacts on soil erosion.

3.2 Industrial pollution prevention

3.2.1. First quarter activities

In the fourth quarter of 2001, we identified the COPAG dairy in Taroudant as a good candidate for the implementation of a pollution prevention and control project in the Souss-Massa. In the first quarter of 2002, we worked to develop an institutional partnership to carry out the project. We prepared a draft collective agreement, which includes as signatories the Province of Taroudant, the Department of Environment, the COPAG, the Souss-Massa River Basin Agency, the Provincial Delegation of Commerce and Industry, ONEP, and the WPM project.

In the reporting period, we collected data from COPAG on their production systems and on the quantity of effluents released, in order to prepare the initial audit planned for the second quarter.



3.2.2. Second quarter activities

In the second quarter of 2002, we conducted an initial audit of the COPAG dairy in Taroudant to identify the sources of effluents released from the dairy operation. We also made general characterizations of the main wastewater effluents and identified potential sources of water savings for the COPAG. In May, we presented the proposed WPM methodology to assist the COPAG in identified viable technical options to reduce their pollution.

We obtained the signature of the collective agreement from the main project partners: the Department of Environment, the COPAG, the Souss-Massa River Basin Agency, the Provincial Delegation of Commerce and Industry, ONEP, and the WPM project.

3.2.3. Third quarter activities

In the third quarter of 2002, we developed a strong partnership with the Souss Massa River Basin Agency (ABH-SM). The ABH-SM has allotted 500,000 Dirhams for the feasibility study of the COPAG activity. We agreed on the tasks each partner will be responsible for. WPM will identify the water saving projects, do the characterization of liquid effluent rejected by COPAG and propose options for treatments to reduce/prevent pollution. Once the water saving projects and treatment options are accepted by COPAG and validated by the Technical committee, ABH-SM will be responsible for conducting a detailed study of these projects and prepare engineering design and bid documents for the selected wastewater treatment option.

On September 19th 2002, we held the second technical committee meeting to discuss the role and task of each signatory of the collective agreement. Partners were also asked to start looking for potential sources of funds COPAG can apply for to help in the implementation of the technical options emanating from the feasibility study.

3.2.4. Fourth quarter activities

In the fourth quarter of 2002, the municipality of Aït Izza, where COPAG is located, renegotiated the collective agreement prepared and signed by most partners. We held a meeting at Aït Izza to discuss the revised version of the agreement. The technical committee, the Pacha of Aït Izza and the President of the municipality, attended the meeting.

The third and the fourth technical committee meetings were held on October 30th and December 10th, respectively. In these meetings, presentations were given to the committee members on the progress of the feasibility study. Preliminary results were also presented and discussed.

We conduct campaign to characterize the liquid effluents of COPAG from October 28th to 31st. The main partners were involved (DOE, ABH and WPM) in addition to COPAG. Most of the laboratory analysis work was done at the laboratory of the ABH. WPM and DOE provided inputs and expertise in this campaign.

To confirm the results obtained during the first campaign, a second campaign of characterization of the COPAG liquid effluents was conducted between November 19th and 23rd. This campaign was conducted by the LPEE, an accredited laboratory specialized sampling and analysis of effluents, in order to compare and validate the results of the first campaign.



In the water savings component, we quantified water consumption by operation within the dairy plant in the fourth quarter 2002. This quantification led to the proposition of 11 water saving projects which were submitted to COPAG for discussion and approval.

3.3 Wastewater treatment and reuse

3.3.1. First quarter activities

In the first quarter of 2002, WPM consultant Brahim Soudi prepared an assessment of potential sites for the implementation of new wastewater treatment and reuse projects in the Souss-Massa. The report reviewed the situation of wastewater treatment in the Souss-Massa and identified four potential sites for the dissemination of wastewater treatment and reuse, following the example of the Drarga project implemented under WRS. The four sites were: (1) the COS-ONE tourism complex, (2) the Commune of Khemis Ait Amira, (3) the Commune of Temsia, and (4) the Commune of Sidi Bibi – Douar Kharba Ouled Mimoun.

For each site, we identified the main characteristics, the issue with wastewater releases, and the potential for wastewater reuse. We also identified potential sites for the implementation of a future wastewater treatment plant. Based on this initial assessment, we recommend focusing on the Commune of Sidi Bibi for the feasibility study because (1) there is a very active and motivated water users association (Association Ouled Mimoun pour le Développement et la Coopération), (2) there is an urgent wastewater problem that requires resolution, and (3) there is a good potential for wastewater reuse.

In March, WPM helped sponsor an international conference on wastewater treatment and reuse. The conference, organized by IDRC was held in Rabat March 26th and 27th. WPM helped prepare the Moroccan case study on wastewater reuse and made a presentation of the Drarga pilot project. The conference highlighted the need for the replication of wastewater reuse projects, particularly in arid regions like the Souss-Massa.



3.3.2. Second quarter activities

In the second quarter of 2002, WPM consultant Brahim Soudi prepared a diagnostic assessment of the village of Ait Mimoun in the Commune of Sidi Bibi, located between Agadir and Tiznit. This assessment described the physical context and provided key parameters on climate, topography, geology, water resources and soil types; described the population and the socio-economic context; described agricultural activities and land use; and assessed the current situation with regard to wastewater and the potential for wastewater reuse.

This diagnostic assessment constitutes a first step in the preparation of the feasibility study for the implementation of a wastewater treatment and reuse system for Ait Mimoun. Mr. Soudi also prepared a draft collective agreement that will be negotiated with project partners. For this project, the partners are: the Province of Chtouka Ait Baha, the Department of Environment, the Souss-Massa River Basin Agency, ONEP, the Commune of Sidi Bibi, the Oulad Mimoun Association for Cooperation and Development, the Anouar Brij Association for Cooperation and Development, the Amal Swalim Association for Cooperation and Development, and the WPM Project.

3.3.3. Third quarter activities

In the third quarter of 2002, the focus was put on meetings with the population of the three douars concerned by this activity. In each of the three douars, there are very active associations that work on socio-eco-cultural projects for the population.



We held workshops with each association, separately, to explain and discuss the need for a WWTP. We discussed the progress of the feasibility study and the steps and phases required before the final design of the WWTP.

The three associations were very aware of the potential danger of polluting the water table, which is the source of their drinking water. They are also aware of the necessity to have a sewage network installed in their douars to collect all wastewater to be treated in the WWTP.

In August, we met with the Governor of Chtouka Ait Baha, We gave a presentation of the project in general and of the wastewater treatment and reuse components in particular. We explained to the Governor why and how we selected the three douars for this activity. We discussed the work progress to date and the need to have a collective agreement signed. This agreement will specify the commitment of each partner related to the feasibility study. The Governor was very understanding and he assured us of his full support to have this study done given the benefits the douars will draw from having a

We organized a visit to the DRARGA WWTP for members of the three associations. A brief description of the plant was given to the visitors who were very impressed by the facility. After the visit, the three associations reiterated their desire for their village to be included in the feasibility study. They also will start collecting funds and looking for external sources of funding for the construction of the WWTP.



The first meeting of the technical committee was held at the Chtouka Ait Baha General Secretary's office. We discussed in detail the collective agreement and a final version was submitted for signature to all project partners.

We also continued to work on the feasibility study for wastewater treatment and reuse in Sidi Bibi, in particular on the options for wastewater treatment; and we started work on the design of the sewage networks for the douars of Oulad Mimoun, Briej and Soualem.

3.3.4. Fourth quarter activities

In the fourth quarter of 2002, we finalized the collective agreement for the Sidi Bibi activity. All partners signed the agreement (Department of Environment, Commune of Sidi Bibi, Province of Chtouka Ait Baha, three Water User Associations, ONEP, Souss-Massa RBA, and WPM).

During this quarter, we focused on laying the ground for the wastewater treatment plant. We analyzed options for the collection of the domestic wastewater and the treatment technology to be used.

We hired a private company (Inovar) to conduct the study and the design of the sewage transportation network. We held meetings with the three associations to introduce the company and to discuss the terms of reference of the mission. The first draft of the design was completed with feedback from the population and the water users associations in each village. To finalize the design, a topographic map of the area was elaborated.



We also collected the information needed to propose an appropriate treatment technology and options for the reuse of the treated wastewater. This was debated and validated during two workshops that involved the beneficiaries and the members of the technical committee. Both workshops were unanimous on the selection of natural lagoons as a treatment technology to be implemented in the area given its advantages related to the specificities of the region. The technology doesn't require energy, is easy to maintain and is recommended by ONEP under similar conditions.

4. Activities anticipated in the first quarter of 2003.

4.1. Souss-Massa River Basin

In the first quarter of 2003, we will start the rehabilitation of the irrigation network in the douars where the study is already done. In terms of reforestation and rangeland plantation, we plan to plant argan and cactus trees on pilot sites, and to distribute carob trees to interested farmers. In cropland, we will distribute olive and almond trees. We will start working on the rehabilitation of cuvettes around old argan trees in the forestland as way to collect water for the trees after rain events.

In Sidi Bibi, we will finalize the design of the WWTP and the study on the sewage water network in the three villages. We will also assist the association to start implementing the sewage network.

In the COPAG activity, we will finish our part of the feasibility study by proposing treatment options that should be presented and discussed in a workshop. Once COPAG makes its choice, the RBA will take over for the detailed design of the selected option and the water saving projects.

4.2. Nakhla watershed

We will start the biological correction of ravines in Zones 3 and 7. We will finish the olive tree plantation and we will mark more areas for planting in Zone 8. We will also plant vine along contour lines in the pilot sites prepared for this action. Fruit trees will be distributed for plantation in irrigated areas of Zones 8 and 11. Other pilot sites for the installation of stone and ditch strips will be addressed in Zones 2, 3, and 7.

The Amtil women's association should have the rabbit production unit installed and should get more women involved with the use of the collective improved cookstove.

5. Meetings and events

Table 1 below shows the meetings and events attended by WPM staff in 2002.

Table 1 Key Meetings Attended in 2002		
Meeting Description	Participants	Date
USAID SO6 meeting	USAID, SIWM, WPM	January 23
USAID partners meeting	USAID, Project partners, WPM	January 25
Meeting with Agence du Nord on Nakhla activities	USAID, Agence du Nord, WPM	February 14
Meeting with DREF Agadir on Abdelmoumen	WPM, DREF Agadir, ORMVA/SM	February 19
National Environmental Council	Department of Environment, Agriculture, Equipment, ONEP, Commerce and Industry, WPM	February 27
Visit of students from the Hassania University on wastewater treatment in the Souss-Massa	Hassania University students, WPM	March 8
Meeting with Procter & Gamble on water treatment technology	USAID, Procter & Gamble, WPM	March 13
Workshops on DCA	USAID, WPM	March 18
IDRC Workshop on wastewater reuse	IDRC, USAID, ONEP, WPM	March 26-27
Meeting with the Ministry of Eaux et Forêts	Eaux et Forêts, WPM	April 5
Coordination meeting on Nakhla activities	DREF, DPA, WPM, MOE	April 19
Presentation of Project activities at CIHEAM short course in Agadir	WPM, MOE	May 2
Meeting with Shaeffer International on wastewater treatment	Shaeffer, WPM	May 14
Workshop on Abdelmoumen watershed with beneficiaries	WPM, Abdelmoumen farmers, local officials	May 21
Workshop on Abdelmoumen watershed with project partners	WPM, Souss-Massa RBA, ORMVA, DREF, Wilaya of Agadir	May 22
Visit of COPAG dairy in Taroudant	WPM, COPAG	May 23
Meeting with the Governor of Taroudant	WPM, Province of Taroudant	May 23
USAID partners meeting	USAID partners	May 30

Table 1
Key Meetings Attended in 2002

Meeting Description	Participants	Date
MOE workshop on NGO partnerships	MOE, WPM, USAID, NGOs	June 18
Workshop on the participatory approach in Nakhla	WPM, MOE, USAID, DPA, DREF, Min. of Agriculture, Min. of Eaux et Forêts, Wilaya of Tetouan	June 27
MOE PANE meeting	WPM, MOE	June 28
USAID Partners meeting to discuss strategy 2005-2010	WPM-SIWM-USAID	July 2
Meeting with DPA-Tetouan and DREF.RIF. to discuss July-Dec activities	DPA-Tetouan-DREF RIF-WPM-MOE	July 4
Discussing July-Dec activities in Sous Massa River Basin	ORMVASM-WPM	July 16
Meeting with associations in Sidi Bibi to discuss the wastewater TRT and Reuse component of the WPM	-Association Ouled Mimoun -Association Breij -Association Soualem -WPM	July 23
Meeting with the Director of ABVSM	ABVSM-WPM	August 8
Presentation of Diagnostic study on waste water TRT & Reuse in Sidi Bibi	-Associations Ouled Mimoun- Breij- Soualem- USAID-SIWM-WPM	August 9
Meeting to set the program for rehabilitation of irrigation network in Abdelmoumen watershed	ORMVASM-WPM	August 16
Visit to Grarga WWT Station	Associations Ouled Mimoun- Breij- Soualem- WPM	August 19
Coordination meeting with ABVSM	ABVSM-WPM	September 11
Meeting with the Governor of Chtouka Ait Baha	WPM-Province Chtouka Ait Baha	September 11
Meeting with a local coordinator of Agence de Developpement Social	WPM-ADS	September 11
Coordination Meeting with ONEP Agadir	WPM- ONEP	September 11

Table 1
Key Meetings Attended in 2002

Meeting Description	Participants	Date
Coordination meeting with COPAG	WPM-COPAG	September 12
Second meeting of the technical committee related to COPAG Activity	WPM-ABVSM-ONEP-Province Taroudant-DCI-MOE	September 19
First meeting to set Technical Committee related to Sidi Bibi activity	WPM-MOE-Province Taroudant-ABVSM-ONEP	September 19
Meeting at ABH-SM preparation of COPAG liquid effluent characterization compaign	WPM-DOE-ABH	October 1
Meeting with Caid Tikki to lunch activity in Abdelmoumen	WPM-CAID-ORMVASM	October 9
Visit to Sous Massa with Emmy Simmon	WPM-USAID-SIWM	October 10
Meeting with association of Bigoudine watershed and Caid of Tikki to discuss procedures for rehabilitating the irrigation ***of 4 douars of the watershed	WPM-Caid-Association	October 15
Third meeting of the technical committee related to COPAG activity	WPM-Technical Committee members	October 30
Meeting with Ait Mimoun et Soualem Association Sidi Bibi	WPM-Association	October 30
Meeting with Ait Aizza Association to discuss collective agreement of COPAG	WPM-Pachalek-Ait Aizza-Municipality-Province Chtouka Ait Baha-ONEP	November 1
Meeting with DOE groups involved WPM	WPM-DOE	November 7
Meeting with Breij Association	WPM-Association	November 16
Meeting at DREF-Rif to discuss workprogram regarding the ravine correction	WPM-DREF-RIF	November 26
Meeting at DPA Tetouan to discuss work program	WPM-DPA	November 27
Creation of village committee in Zone9, Tanarekt	WPM-CT-DPA	November 29

Table 1 Key Meetings Attended in 2002		
Meeting Description	Participants	Date
Fourth Meeting of the Technical Committee related to COPAG activity	WPM-Technical Committee members	December 10
Validation workshop of the wastewater treatment Option: Beneficiary Meeting	WPM-Technical committee members	December 18
Validation workshop of the wastewater treatment Option: Technical Committee Meeting	WPM-Association	December 18

6. Consultant missions

6.1 First quarter activities

Nakhla activities

- **Fouad Rachidi, Rachid Bouabid, and Mohamed Mounsif** were fielded in January and February 2002 to implement the campaign of olive and fruit tree planting, prepare a draft collective agreement, and assess the goat breeding program begun under WRS.

Souss-Massa activities

- **Fouad Rachidi, M’Hammed Tayaa, Rachid Bouabid, Mohamed Mounsif, Mohamed Mehdi, and Akka Ait El Mekki** were fielded in February and March 2002 to conduct a participatory diagnostic assessment of soil erosion in the Abdelmoumen watershed.
- **Brahim Soudi** was fielded in March 2002 to collect data on wastewater treatment and reuse potential in the Commune of Sidi Bibi in the Souss-Massa.

6.2 Second quarter activities

Project Management

- **Mohamed Khatouri** (project supervisor) was fielded in May 2002 to review the progress of WPM activities in Nakhla and in the Souss-Massa and to start work on a GIS for the Abdelmoumen soil erosion control project.

Nakhla activities

- **Fouad Rachidi, Rachid Bouabid, and Mohamed Mounsif** were fielded in April, May and June 2002 to work on the action plan for the extension of soil erosion activities in the Nakhla watershed and to prepare the workshop on the participatory approach.

Souss-Massa activities

- **Fouad Rachidi, M’Hammed Tayaa, Rachid Bouabid, and Mohamed Mehdi** were fielded in May and June 2002 to prepare an action plan for soil erosion control activities in the Abdelmoumen watershed, begin developing a GIS for the watershed, and participate in the workshops to validate proposed actions with beneficiaries and project partners.

- **Driss Messaho** was fielded in June 2002 to conduct the preliminary audit of the COPAG dairy in Taroudant.
- **Brahim Souidi** was fielded in May and June 2002 to prepare a diagnostic assessment of the potential for a wastewater treatment and reuse project in the Commune of Sidi Bibi, Souss-Massa.

6.3 Third quarter activities

Nakhla activities

- **Rachid Bouabid and Mohamed Mounsif** were fielded in July and September To prepare the annual program contract for the period July-December 2002 and to select pilot sites for vine reintroduction, stone wall installation on contour lines and ravines for both mechanical and biological treatment.

Souss-Massa activities

- **Rachid Bouabid** was fielded in September to identify irrigation perimeters in the bigoudine watershed for irrigation network rehabilitation.
- **Driss Messaho** was fielded in July and September to prepare, for COPAG, the first liquid effluent characterization campaign and to prepare and attend the second technical committee meetings.
- **Brahim Souidi** was fielded in July, August and September to lead workshops held for the three associations and collect data for waste water treatment options. He also helped starting the study on the sewage network.

6.4 Fourth quarter activities

Nakhla activities

- **Rachid Bouabid** was fielded in October, November and December. He was involved in launching the stones strips and ditches strip pilot sites, marking the cropland for olive trees plantation. He helped in the identification of the ravine to be corrected mechanically and biologically.
- **Mohamed Mounsif** was fielded in October, November and December. He led the identification of farmers who are interested by the demonstration trials regarding supplementation and management of goat and cattle. He lead the vaccination campaign for the animals which will be involved in the trials.

Souss-Massa activities

- ***Rachid Bouabid*** was fielded in October, November and December. He led the work related to the irrigation network rehabilitation. He prepared the contracts, to be signed by farmers and other partners, which state the responsibilities and obligation of each partner on this action. He helped generating data for the GIS to be able to estimate soil erosion in the watershed.
- ***Mohamed Mounsif*** was fielded in October, November and December. He performed a survey in the watershed on goat production. He was involved in the choice of farmers for goat supplementation and management trials.
- ***Driss Messaho*** was fielded in October, November and December. He led the first and the second COPAG effluents characterization campaigns. He was heavily involved in the quantification of water consumption by operation within COPAG. He attended and presented progress work to the third and the fourth technical committee meetings.
- ***Brahim Soudi*** was fielded in October, November and December. He supervised data collection necessary to propose WWTP and technology to be submitted to the associations and to the technical committee for approvals. He worked closely with the private company hired to do the sewage network design for the three douars involved in the study. He led the validation workshop concerning the treatment technology and options for reuse of the treated water.

7. Reports and Deliverables in 2002

Table 2 below shows the reports prepared under the WPM activity in 2002.

Table 2 Reports and Deliverables in 2002		
No.	Report Title	Date
1	Quarterly Progress Report - First Quarter 2002	June
2	Quarterly Progress Report - Second Quarter 2002	July
3	Quarterly Progress Report - Third Quarter 2002	October
<i>Nakhla watershed</i>		
4	Analyse économique et financière du projet Nakhla	June
5	Contrat-Programme WPM-DPA, Juillet-Décembre 2002	October
6	CPS Réhabilitation des réseaux d'irrigation de Bettara and Al Ouaddiyine	December
7	Rapport sur l'introduction de fours améliorés dans le B.V Nakhla.	December
<i>Souss-Massa river basin</i>		
8	Projet pilote de développement intégré en zone de montagne: Cas du bassin versant de Bigoudine – Rapport de Diagnostic	April
9	Diagnostic des sites potentiels pour la mise en place d'un système de traitement et de valorisation des eaux usées épurées dans la region du Souss-Massa	April
10	Projet pilote de développement agricole intégré en zone de montagne: Bassin versant Dou Tamma, Souss-Massa – Rapport de l'atelier de validation	May
11	Projet Pilote de développement agricole intégré en zone de montagne : B.V. Doutamma, Sous Massa : Rapport de l'étude pédologique	July
12	Projet Pilote de developpement agricole intégré en zone de montagne : B.V Dou Tamma, Sous Massa : Rapport plan d'action	August
13	Etude de diagnostic et de monographie de la zone d'Ait Mimoun retenue pour la réalisation de l'étude de faisabilité détaillée pour l'assainissement, le traitement et la valorisation des eaux usées épurées	August
14	Economie d'eau et dépollution industrielle dans le sous Massa : Cas de la COPAG- Note Méthodologique	September
15	Economie d'eau et dépollution industrielle dans le sous Massa – Rapport sur l'état d'avancement	September

Table 2 Reports and Deliverables in 2002		
No.	Report Title	Date
16	Signature de la convention cadre relative à l'étude de faisabilité sur le traitement et réutilisation des eaux usées	October
17	Etude détaillée de la réhabilitation de réseaux d'irrigation dans cinq zones d'action de la zone du projet	November
18	Contrat d'exécution des travaux de réhabilitation de partenariat pour le réseau PMH	December
19	Etude de mise en place d'un système de traitement et de réutilisation des eaux usées, localité ait Mimoun : Monographie de la zone d'étude, filière technologique d'épuration et options de réutilisation	December

Annexes

Annex A : Budget Tables

Annex B : WPM Project Technical and Management Reports

Annex A
Budget Tables

This annex presents the expenditures incurred by the WPM project in its first year. The first exhibit shows local expenditures. In the year 2002, we spent 2.14 million Dirhams on the Nakhla watershed and 4.36 million Dirhams in the Souss-Massa. Thus, the total WPM local expenditures in the reporting period amount to 6.50 million Dirhams. These expenses include salaries for local long-term professionals and support staff; travel, transportation and per diem for the project teams involved in project activities; and other direct costs (ODCs). In the first year of 2002, we purchased two vehicles: one project vehicle for activities in the Souss-Massa, and a 4-wheels drive vehicle for the CT of Ben Karrich to carry out project activities in the Nakhla watershed. In addition, we implemented activities in both Sous Massa area and in Nakhla watershed.

The second exhibit shows the US Dollar expenditures in the reporting period. These include a multiplier of 85% on local salaries and a general and administrative fee of 4.61% on other costs. The total dollar expenditures in the reporting period amount to about \$380,000.

Annex B :

WPM Project Technical and Management Reports